CeC PoP

Facilities & Experimental Support

Address infrastructure and utilities modifications…..

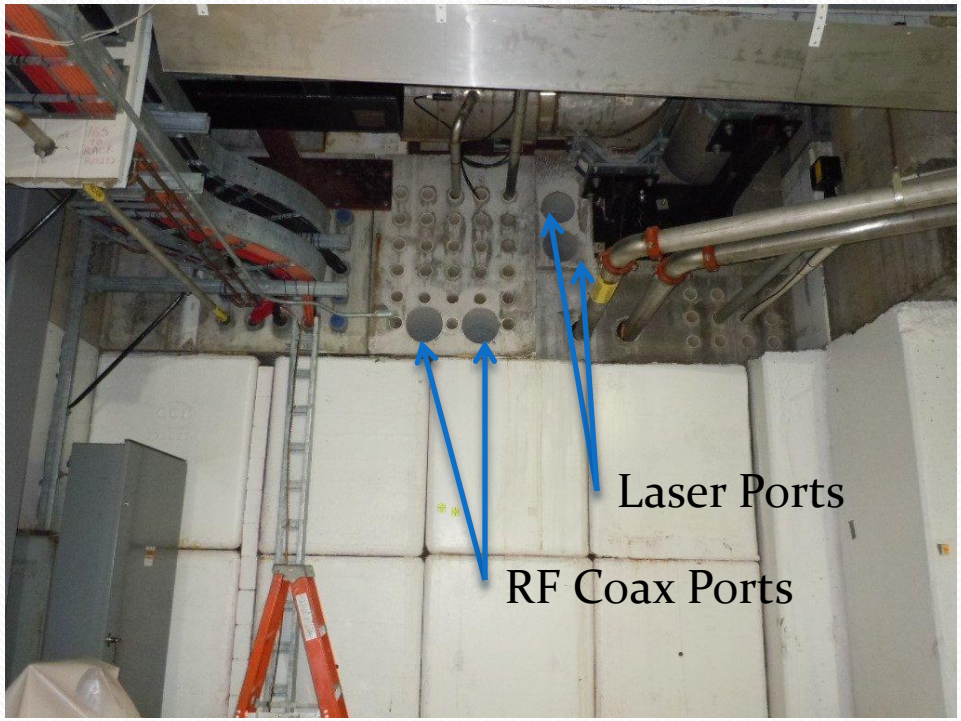
- Structural and configuration modifications
- Utility capacities and distribution
- Civil and Mechanical Construction
- Environmental and Safety Compliance

Structural and Configuration:

- Extensive new cable tray
- New racks, cabinets, amplifiers, etc
- Routing of RF Coax includes core drilling 9” ports through 7’ of existing concrete shielding
- Modification of floor gratings for stand support
- Relocation of Access Controls Gate 2G11
- Design, fabrication and installation of new modular structure style Laser Building

New Ports for RF Coax & Laser

- Complete as of Jan.
- Installation reviewed with D. Beavis for suitability from RSC perspective
- Determination of distance and angle from beamline were necessary for analysis



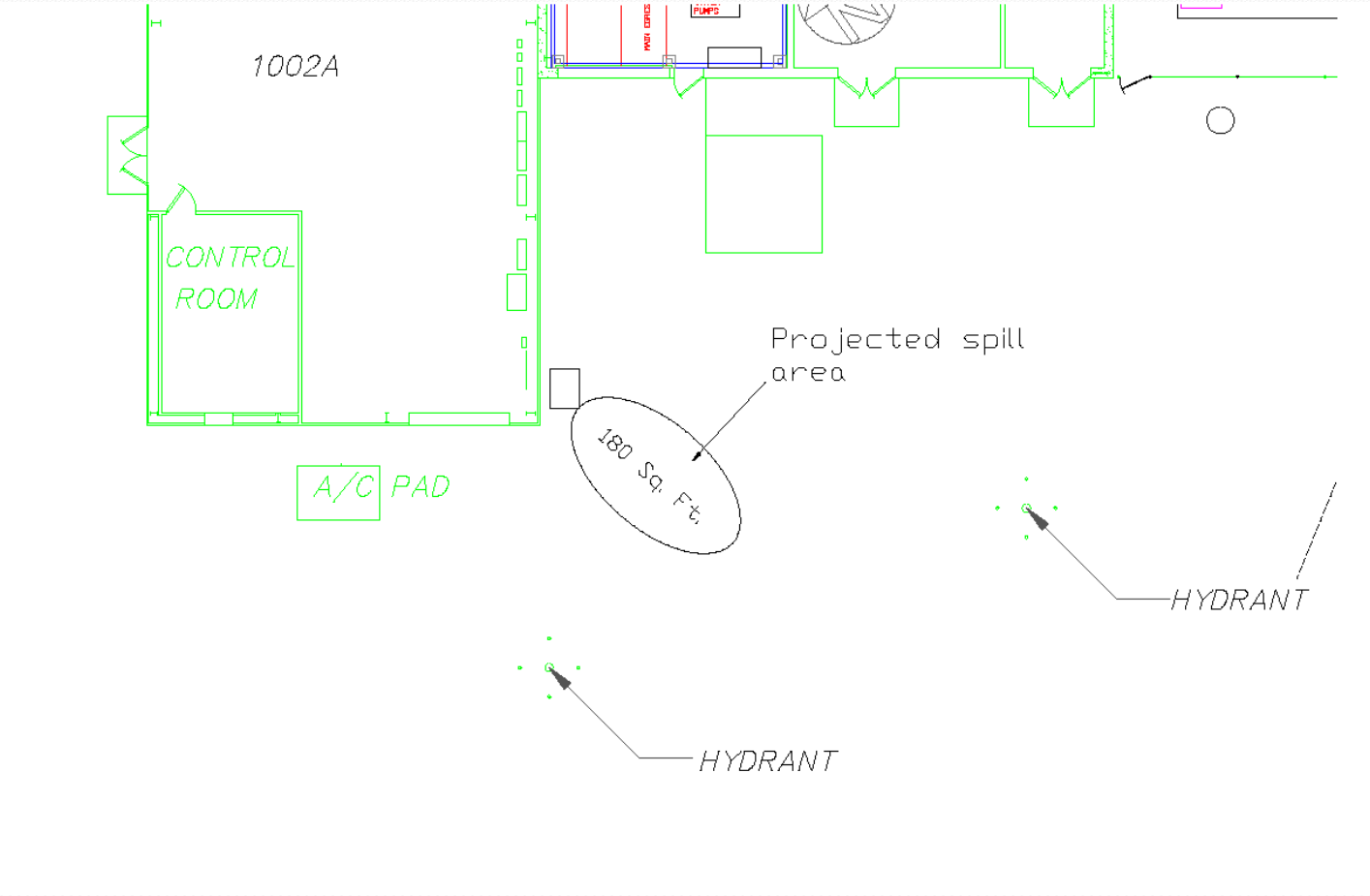
Utilities:

- Power requirements for:
  - RF Amplifiers, Power Supplies
  - Cooling Water
- Cooling water for solenoids, RF Equipment, bunchers, cryo compressor & pumps
  - New Cooling Tower installation
  - New distribution piping, pumps and controls
  - Refurbish existing piping and heat exchangers
- Ventilation for cooling and ODH compliance (3000 cfm required)

HVPS

- Installed outside Bldg 1002B on concrete pad, grouted in place
- Wiring is side entry to minimize risk of water intrusion
- Traffic barrier installed (not in picture)
- Contains 215 galls of Cross Grade 206 Mineral Oil
- Secondary Containment not required …BUT need to provide spill kit in the area.
- Calculated “spill area” estimated to be 180 sq. ft.

Estimated Mineral Oil Spill Area



Pump Room

Cooling equipment

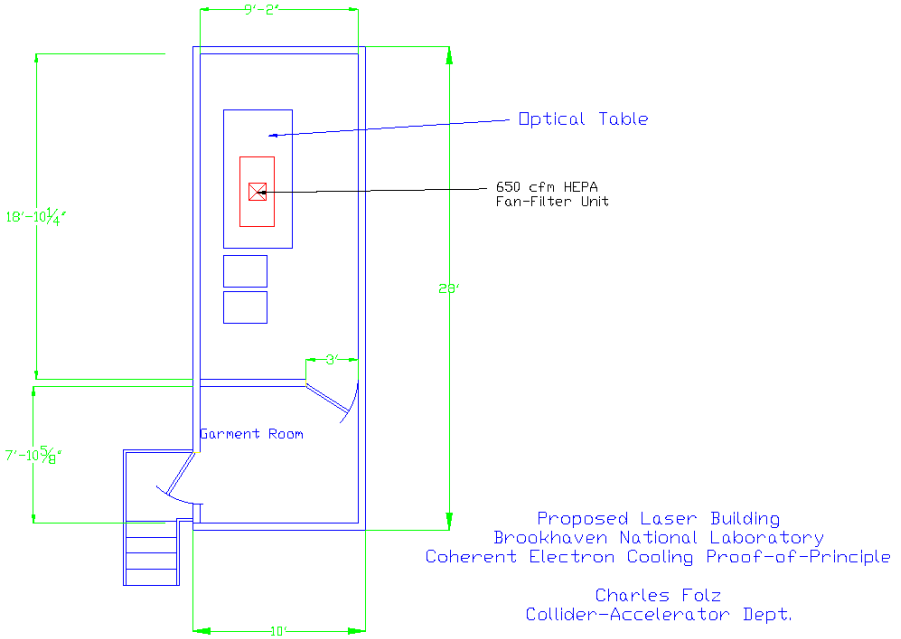
- Overhauled Pumps
- New Pump VSD's
- New/refurbished piping
- New lighting

Cryo Equipment:

- He Pump skids
- He Compressor
- Control Panel
- New Cryo & cooling piping

Laser Room:

- Provision for optical table
- Space for racks and power
- Dressing room
- "Clean Room" style HEPA filtration
- Proximity to space served
- Requires separate power feed from 1002B
- Compliant with DOE STD-1088-95 "Fire Protection for Relocatable Structures"; prescribes proximity to other structures…



Hazard Document

- Collider-Accelerator Hazard Identification Tool
- Explanation of Rating

  A Hazard Rating of 0 indicates an operation with minimal risk
  A Hazard Rating of 1 indicates an operation with low initial risk
  A Hazard Rating of 2 indicates an operation with moderate initial risk
  A Hazard Rating of 3 indicates an operation with a high initial risk

  Because of the hazards identified, this operation has the potential of being an operation with a moderate initial risk. Please ensure that you adequately address the magnitude of the hazard (i.e., quantity, duration, frequency, physical state) in your analysis.
- Operation Title:
- Coherent Electron Cooling Facilities Support
- Point Of Contact:
- Charles Folz
- Highest Hazard Rating:
- 2
- The following questions were answered YES and are considered a hazard rating of 2:
- 6d. Has electrical equipment been built locally, modified or NOT listed by a Nationally Recognized Testing Laboratory?
- The motor control units for the water pumps contain contactors and components that have been listed. The assembled units have been inspected and approved by a BNL approved EEI.
- 7g. Does work require fall protection equipment (harness, lanyard)?
- The 2:00 IP area and both service buildings are high bay areas where some of the installation of cable trays, conduits, piping, cables, and coax will be about 6 feet. Ladders and scaffolds will be used as well as moveable man-lifts. When required, harnesses and lanyards will be used.
- 7m. Are there any sources of stored energy (hydraulic, pneumatic, thermal, mechanical)?
- In addition to the cryogenic system, there are typical water cooling systems for magnets and power supplies and the normal RHIC pneumatic system for operating equipment.
- 12d. Will this operation change the risk level of fire protection?
- The value of the equipment in the area will be increasing and there will be more operating electrical equipment. The RF power supply outside of 1002B is oil filled.
- 13. Are there any controls (i.e., ventilation, fume hoods, interlocks, personal protective equipment, HEPA filters/vacuum cleaners, medical monitoring) associated with this operation?
- A ventilation fan is being added to 1002A to deal with the heat load from the cryogenic pumps and compressors that have been added to the building. This fan will also be part of the ODH detector system in that building and will come on automatically if an ODH event (19.5 % O2) is detected.
- 13c. Is any personal protective equipment used in this operation?
- See item 7g above. Fall protection equipment, eye protection, hardhats, and gloves when required in accordance with work planning and BNL rules.
- The following questions were answered YES and are considered a hazard rating of 1:
- 1. Are there any chemicals, toxic materials, or hazardous materials handled, generated, used, or stored in this operation, including oils and solvents?
- Lubricating oil?
- 7b. Does the operation include the use of hoist, crane, forklift, or rigging?
- The 02:00 IP has a 10 ton crane which is in the laboratory data base and receives regular scheduled maintenance and inspection. Laboratory forklifts and other rigging equipment will be used to install equipment. All rigging equipment will be inspected in accordance with laboratory standards. No special equipment or lifting rigs are expected to be needed at this time.
- 7f. Will this operation require any elevated work?
- See item 7g above.
- 7l. Does the operation include the use of typical shop equipment?
- Hand tools that are in our present inventory and that meet Laboratory standards will be used for component fabrication, assembly, and installation.

Remaining Issues:

- Laser Room specified floor rating to be increased from 50 psf to 100 psf
- Optical table to be selected carefully for vibration isolation and transmission
- BNL Fire Protection to be consulted on final implementation of "DOE Std. for Relocatable Structures" and interconnect with BNL fire protection systems
- Careful coordination with Access Controls is necessary for movement of interior gate & partition at beginning of shutdown
- Based on ODH calculations, fan requirement of 3000 cfm is indicated. Installation will also offer thermal ventilation, but *ODH function will control*. Planning roof curb mounted exhaust with lower half of room for air inlet.

Summary

- *Preparatory work is well underway; significant items already completed are 1002B cable tray and core drilling for ports, cooling tower, pumps, pump VFD's and main piping along with HVPS and 80 kw RF amplifier.*
- *Work safety continues to be a priority. Difficult access for tray installation was helped by continued use of small maneuverable manlift; CAD Safety was brought on board very early in the core drilling project contract.*
- *Helium Pumps and skids are in place*
- *Challenges continue as space becomes increasingly constricted with each new tray, piece of equipment or pipe run installed.*
- *Plans are in place for Summer 2013 work…ODH fan, Laser Room, Tunnel partition, etc.*

Backup on Following Slides…

Material Safety Data Sheet

CrossTrans 206

CROSS OIL REFINING & MARKETING, INC.

Revised: 1/08/09
MSDS #: CrossTrans

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: CrossTrans 206 **General Uses**: Electrical Insulating Oil.
Product Description: Amber Liquid, Hydrocarbon Odor.

MANUFACTURER:
Cross Oil Refining & Marketing, Inc.
484 East Sixth Street
Smackover, Arkansas 71762
MSDS prepared by: Clark B. Smith

EMERGENCY TELEPHONE NUMBERS

(870) 881-8700, Ext. 1163 [USA]

(870) 881-8700, Ext. 1128

2. COMPOSITION INFORMATION

			% Vol.
CHEMICAL FAMILY: Petroleum Hydrocarbon		**Common Name**: Naphthenic Oil	99.7 to 99.92%
		Antioxidant	0.3 to 0.08%
HAZARDOUS INGREDIENTS: None Known		**Exposure Limits (Oil Mist):**	**TWA**
		ACGIH, TLV(ppm)	5
CAS #: Grades < 100 SUS @ 100 F	64742-53-6	OSHA, PELS (ppm)	5
	128-39-2	NIOSH, TWA (ppm)	5

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

Clear light to dark amber liquid. Mild hydrocarbon odor. Can burn in a fire.

POTENTIAL HEALTH EFFECTS:

INHALATION: Will not produce vapors unless heated to temperatures of ~300 °F.
EYE CONTACT: Irritating, but will not permanently injure eye tissue.
SKIN CONTACT: Prolonged or repeated contact may cause skin irritation.
INGESTION: Small amounts (tablespoonful) swallowed are not likely to cause injury. Larger amounts may cause nausea and vomiting. Consult a physician promptly.
CHRONIC (CANCER) INFORMATION: IARC Monographs state that when laboratory animals are exposed to severely hydrotreated oils, such as these product(s), there is insufficient evidence for cancer. Thus, these oils are **Unlabeled** in accordance with 29 CFR 1910 .1200.

4. FIRST AID MEASURES

EYE CONTACT: Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.
SKIN: Wash skin with plenty of soap and water for several minutes. Get medical attention of skin irritation develops or persists.
INGESTION: If more than several mouthfuls have been swallowed, give two glasses of water (16 Oz.). Get medical attention.
INHALATION: If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or symptoms persist.

HVPS Spill Area Calculation

- Method from PNNL "Spills on Flat Inclined Pavements
- Spill area can be calculated based on final thickness of spill. This state is reached when surface tension of liquid is balanced with gravitational force acting on fluid (density).
- Contact angle accounts for surface roughness
- *h= SQR ((1-cosØ)σ)/(density)(g)*
- For mineral oil on asphalt, contact angle estimate is 70 deg.
- Mineral oil surface tension is 30.9 dyne/cm, density is 860 kg/cu. M
- Total spill surface area is 16.58 sq. m or about 180 sq. ft.

Assessment of Secondary Containment requirements for oil-filled Power Supply

Federal Regulation

Oil filled equipment are regulated under the Federal Spill Prevention, Control and Countermeasures (SPCC) Regulation at 40CFR106.

Under the SPCC regulation, the power supply meets the definition of "Oil-filled operational equipment."

The SPCC regulation allows Oil-filled operational equipment without secondary containment, provided that the facility:

1. has an oil spill contingency plan and written commitment of manpower, equipment, and materials to quickly control and remove discharged oil; and
2. has an inspection or monitoring program for the equipment to detect a failure and/or discharge.

BNL has an Oil Spill Contingency Plan and written commitment of manpower, equipment and materials to quickly control and remove discharged oil.

Inspection and monitoring of the power supply would be the responsibility of C-AD.

State Regulation

Oil storage facilities are regulated in New York State under 6NYCRR Parts 213 and 214. These regulations were originally promulgated to regulate tanks where oil was being stored. However, in 2008 the New York State legislature changed the state law, specifically the definitions of petroleum, tank, and facility. In response to these changes, NYSDEC issued an "Enforcement Discretion Directive" in 2009, in which they acknowledged that tank standards are inappropriate for many operational tanks, They further committed not to enforce State regulation on operational tanks until the regulation was updated to provide specific requirements for such tanks. As of March 2013, the regulations have not been updated.

County Regulation

Article 12 of the Suffolk County Sanitary Code applies to storage and use of oil. BNL and Suffolk County have a legal agreement in which the lab commits to conform with Article 12 requirements. Those requirements are reflected in the lab's Standards Based Management System (SBMS)

CASSONE TRAILER AND CONTAINER CO.

Quotation

1950 LAKELAND AVE.
RONKONKOMA , NY 11779
(631) 585-7800 PHONE
(631) 585-7895 FAX

Quote Number: 134874
Date of Quote: 11/21/2012

Quoted By Steve Milia

For: Charles Folz, Project Engineer

BROOKHAVEN NATIONAL LABORATORY
PO BOX 5000
UPTON NY 119735000
Phone (631) 344-4671 Ext.
Fax (631) 344-3674

Deliver To:

Project Name
Collider-Accelerator Department
Street Address
City Upton
State NY Zip 11973

Trailer Size	Trailer Type	Trailer Number	P.O. Number:
10 x 28	Modular Building		

Sale Purchase Price $42,540.00

Additional Charges

	Amount	Period
DELIVERY	$1,900.00	
SKIRTING	$2,057.00	
SET-UP (BLOCK & LEVEL DOUBLE PIER)	$350.00	
ANCHORING OPTION $95 per anchor QTY:8	$760.00	
ALUMINUM PLATFORM WITH STEPS	$850.00	
OPTION 12' wide ILO 10' wide ADD	$4,100.00	
OPTION: High Rib Steel Siding ADD	$2,475.00	
OPTION: Acoustic suspended ceiling ADD	$1,250.00	
OPTION: 4" Thick 4,000 PSI concrete floor	$2,325.00	
NOTE: SEE SPECIFICATIONS SHEET		

Special Terms and Condition

Electrical supply and connection by others.

Contact Name
Cross Street
Notes

Visit our Website at www.Cassone.com !

We Will Beat Any Competitor's Price

We Are A WBE Certified Organization